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ABSTRACT

A study was conducted at Southwest Texas Junior College (STJC) to assess current management practices used by the physical plant maintenance department (PPMD) and to develop a strategic plan for physical plant management. Procedures included an analysis of current management practices and systems that affect physical resources, and periodic and preventive maintenance, and the development of recommendations for the design of a system for expansion and modification of existing facilities and construction of new facilities. A survey designed to determine the adequacy of facilities and services was sent to 141 administrators. Study findings, based on an 88.65% response rate, indicated that STJC needed: (1) a fire safety training program; (2) a hazardous substance training program; (3) a maintenance personnel training program; (4) a space management program; (5) an adequate heating and cooling system; (6) proper application of janitorial services; (7) review of PPMD staffing; (8) better lighting; (9) plans for handicapped personnel; (10) improvement of groundskeeping; (11) improvement of general campus maintenance; (12) a computerized control system; (13) better enforcement of parking policies; (14) coordination between committees; and (15) plans for increased enrollment. Based on survey results and interviews with the PPMD personnel, a master plan for future facilities planning, maintenance, and energy management was developed. The study report contains 92 references, interview questions, campus survey, a control chart for procedural elements of the plan, and current and proposed organizational charts. (KP)

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ED 379 035

DEVELOPMENT, IMPLEMENTATION, AND EVALUATION OF A STRATEGIC PLAN FOR IMPROVING PHYSICAL PLANT MANAGEMENT AT SOUTHWEST TEXAS JUNIOR COLLEGE

Wilford Winston Box

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A Major Applied Research Project presented in partial fulfillment of the requirements for the degree of Doctor of Education

Nova Southeastern University

August, 1994

JC 950 113

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Abstract of a major applied research project presented to Nova Southeastern University in partial fulfillment of the requirements for the degree of Doctor of Education

DEVELOPMENT, IMPLEMENTATION, AND EVALUATION OF A STRATEGIC PLAN FOR IMPROVING PHYSICAL PLANT MANAGEMENT AT SOUTHWEST TEXAS JUNIOR COLLEGE

by

Wilford Winston Box

August, 1994

Southwest Texas Junior College (SWTJC) is a public, tri-county, state supported junior college district comprised of a main campus and two major outreach campuses. The college has an average enrollment of approximately 3,000 students. The mission of SWTJC calls for continuing assessment of ways to improve college operations and to provide the best educational services for the students (SWTJC 1993-94 Catalog, p. 14).

The college is fully accredited by the Southern Association of Colleges and Schools (SACS) which requires of each member institution a periodic

self-examination of all facets of the organization. Standard 6.4 of the Criteria for Accreditation (SACS) requires that institutions conduct an examination of Physical Resources which include buildings and equipment, space management, and grounds and equipment maintenance (SACS, 1992-93).

Located in Uvalde, Texas, the college has a 79 acre campus with approximately 24 buildings. Outreach centers are located in Del Rio and Eagle Pass, Texas. Despite the widely dispersed facilities, however, all maintenance functions and personnel are located on the main campus in Uvalde.

The Physical Plant Maintenance Department (PPMD) at SWTJC had not updated its management procedures since the inception of the college in the late 1940's nor has the department conducted periodic assessments of its effectiveness. This study, therefore, addressed the current management practices used by the PPMD and developed strategic plans for future facilities planning and management of the PPMD.

Procedures included (1) an analysis of current management practices and an examination of systems that impacted physical resources, periodic and

preventive maintenance of the plant; and (2) recommendations for the design of a system for expansion and modification of existing facilities and construction of new facilities.

Analysis of current management practices was accomplished in two stages: (1) An in-depth interview was held with the Director of the PPMD to determine which management practices were in need of improvement, and (2) a survey was sent to 141 faculty, staff, and administrative personnel to collect information on procedures, functions, and operations of physical resources and plant maintenance.

The interview with the Director of the PPMD revealed that management practices needed updating, that a prioritized listing should be developed for improvement of facilities, that a computer is in place but personnel are not available to be trained to operate a computerized maintenance system, and that building space is inadequate for some programs and functions. Also, campus parking, grounds maintenance, and facilities to serve the needs of disadvantaged personnel should be upgraded.

The survey that was sent to 141 administrators, faculty, and staff members to determine adequacy

of campus facilities and services produced a return rate of 125 surveys for a response rate of 88.65%. Comments were made concerning inadequate space in conference rooms and classrooms; heating and cooling was described as inadequate because of aged equipment; janitorial services, general maintenance, facilities for disadvantaged personnel, vehicle parking, and appearance of campus grounds all were described as needing improvement. Procedures and training for fire safety programs and hazardous substances were described as inadequate. Also, exterior lighting of campus grounds was viewed as substandard.

To rectify those inadequate situations, a strategic plan was developed to include a Control Chart for Procedural Elements of the Plan to track each function, and recommendations were made that a committee be appointed to implement and evaluate the elements contained in this study.

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Chapter 1

INTRODUCTION

Southwest Texas Junior College (SWTJC) is a public, tri-county, state supported junior college district comprised of the counties of Real, Uvalde, and Zavala. The campus began operation on October 14, 1946 with the main campus located on 79 acres of land in Uvalde, Texas, approximately 80 miles due west of San Antonio, Texas. SWTJC is accredited by the Southern Association of Colleges and Schools, the Texas Education Agency, and the Coordinating Board of Texas Colleges and Universities. It has full membership in the Texas Public Junior College Association, the Southern Association of Community Colleges.

There are two major outreach campuses located in the Mexico border cities of Del Rio and Eagle Pass, Texas; minor outreach campuses are located in the Texas cities of Carrizo Springs, Crystal City, Pearsall, Hondo, and Leakey. The annual average enrollment for SWTJC is approximately 3,000 students. This enrollment figure is projected to increase within the next two to three years because of the forthcoming implementation of specialized programs at the college.

This type of growth in student enrollment creates an even greater demand for SWTJC to build strategic plans in order to continue providing adequate services to students, faculty, and staff members. The mission and scope of operations at SWTJC requires continuing assessment of ways to improve the college facilities and provide the best educational service for the students (SWTJC 1993-94 Catalog, p. 14).

Statement of the Problem

There is a need to improve institutional planning as set forth by the Southern Association of Colleges and Schools (SACS) that requires each member institution to perform a periodic self-examination of all facets of the organization. Standard 6.4 of the Criteria for Accreditation (SACS) requires that institutions conduct an examination of Physical Resources which include buildings and equipment, space management, and grounds and equipment maintenance (SACS, 1992-1993: 6.4).

At the present time, it appears that there has not been adequate strategic planning to provide general direction for improving the physical plant management at SWTJC. Under the current structure,

everyone from department level to the division level and all the way to the top officials of SWTJC is independent in decision making. Kotter (1985) states

> Even well-educated and fairly sophisticated observers think of today's work organizations as being made up of a few leadership jobs which direct a cadre of management jobs which supervise masses of individual contributors. Such misperceptions clearly impair people's effectiveness at work. (p. 170)

If a college accepts Kotter's theory, all levels of the entire organizational structure at SWTJC should work to achieve interdependency among all major activities in physical plant management. All faculty and support staff should remain flexible toward change as technology advances and the adoption of change is viewed not as an option, but as a requirement. Covey (1989) notes

> Interdependence is a higher value than independence. As we become independent--proactive, centered in correct principles, value driven and able to organize and execute around the priorities in our life with integrity--we then can choose to become interdependent--capable of building rich, enduring, highly productive relationships with other people. Interdependence opens up worlds of possibilities for deep, rich, meaningful associations for geometrically increased productivity, for serving, for contributing, for learning, for growing. (p. 187)

The foregoing quote by Covey (1989) is descriptive of the Physical Plant Maintenance Department (PPMD) at SWTJC in that it had not updated its management procedures since the beginning of the college in the late 1940's, nor has the department conducted periodic assessment of its effectiveness. Therefore, being independent rather than interdependent could create further problems for the college, or being reactive rather than proactive may be the reason improved physical plant services are less than optimal campus-wide.

Background and Significance of the Problem

There is continuing need to analyze current management practices and develop, refine, and adjust strategies that will lend stability and continuity to the programs that support the mission and purpose of SWTJC. According to Drucker (1993), organizations must be results centered:

> Results in an organization exist only on the outside. Society, community, family are self-contained and self-sufficient; they exist for their own sake. But all organizations exist to produce results on the outside . . . . The results of the school or the university are graduates who put to work what they have learned in their own lives and work . . . . This also requires that an organization

> appraise and judge itself and its performance against clear, known, impersonal objectives and goals. (pp. 54-55)

Based on Drucker's statement, SWTJC has the responsibility in accordance with its mission statement (SWTJC 1993-94 Catalog, p. 14) ". . . to achieve its purpose by continually evaluating, strengthening, revising and/or changing offerings, facilities, finances and methods," and to assess current goals and to develop strategies that lead to improved institutional effectiveness, physical resources development, and physical plant maintenance and energy management. These functions combine to reinforce the foundation of the organizational structure and provide the service that SWTJC is required to provide to all personnel.

Major Issues and Research Questions

The three major issues in this study were (a) strategic planning processes, (b) strategic plan implementation, and (c) strategic plan evaluation. These three major issues were aligned in this particular order of priority to build a support framework for the research questions.

The first major issue, strategic planning, was established to set up futuristic goals to address

the factors identified in this study that needed correction. To develop strategic plans, Drucker (1990) says ". . . the focus is always on improving the way we work, the way we train. And you need a continuing strategy for doing so" (p. 60). Strategic planning is the decision-making phase of management that precedes the implementation phase.

The second major issue, strategic plan implementation, was used to activate the methods and procedures for putting the developed strategies into action. Pearce and Robinson (1991) say that "the strategy must be translated into concrete action, and that action must be carefully implemented. Otherwise, accomplishment is left to chance" (p. 323).

This process of implementation was also addressed by Steiner and Miner (1977) who report: "To formulate policies and strategies without assuring their implementation is an exercise in futility" (p. 607).

The third major issue, strategic plan evaluation, was used to determine if the strategies that were implemented were operating effectively. Bittel and Ramsey (1985) state:

> After the strategy is implemented, top managers must evaluate its effectiveness.

> Such evaluation is the phase of the strategic planning process during which top managers determine whether their strategic choice as implemented is meeting the objectives of the firm. (p. 688)

These three major issues, supported by the literature, combined into a management process that led to the design of research questions used in this study.

The research questions addressed in this study were as follows:

1. What current management practices impact the overall functions and operations of the Physical Plant Maintenance Department at SWTJC?
2. How do these management practices affect the ability of the college to fulfill its primary mission, that of providing educational opportunities for students?
3. How can the effectiveness of the Physical Plant Maintenance Department be improved?
4. What elements should be included in a Master Plan for future facilities planning, maintenance, and energy management?

Definition of Terms

Management process is a phrase used to collectively refer to the five functions of management:

planning, organizing, staffing and human resource management, leading and interpersonal influence, and controlling.

Physical plant maintenance refers to the scheduled, periodic, and preventive maintenance for the upkeep of buildings, equipment and grounds of the physical plant.

Physical resources development is the system of assurance that the physical environment of the institution contributes to an atmosphere for effective learning. The physical resources, including buildings and equipment that adequately serve the needs of the institution in relation to its stated purpose, programs, and activities.

Quality Circles is a term that refers to groups of from two to ten employees who form a natural working group where all members know one another's duties and are work-related in some ways. These groups meet on a regular basis to discuss productivity and how to improve it. The results of the discussions are then reported to members of management.

Strategic planning is a long-term future oriented process of assessment, goal setting, and decision making that maps an explicit path between the present and a vision of the future.

Assumptions

It is assumed that necessary support and cooperation from a large number of people would be forthcoming since this project affected the physical work environment of the general membership of the college. Also, because of concerns that were expressed by faculty and staff members about inadequacy of facilities of the physical plant, it was assumed they would provide feedback to survey instruments designed to assess those concerns.

The president of SWTJC had expressed interest in this type of study for the improvement of management practices at the college. Therefore, it was assumed that he would provide the necessary support and delegate needed authority to permit this study to be conducted.

And, during this study, the college was involved in a campus-wide self-study to prepare for the forthcoming visit by the Southern Association of Colleges and Schools (SACS) reaccreditation team

in 1995. It was assumed this type of study could potentially provide useful information for upper level managers to identify problems and take corrective actions before the arrival of the SACS team.

Limitations of the Study

The limitations deemed appropriate for this study were (a) resistance to change may have influenced some survey respondents to provide answers to the questions that were posed, but they were not a complete depiction of the function or process under study; and (b) this study was limited to SWTJC and the results may not be appropriate for generalization to other institutions.

Chapter 2

REVIEW OF THE LITERATURE

The literature review is organized in three subsections which were designed to show the literature sources that apply to the major issues in this study. Subsections of literature are (1) Developing the Strategic Plan, (2) Implementing the Strategic Plan, and (3) Evaluating the Strategic Plan.

Developing the Strategic Plan

Planning is the foundation of any program or system, and all action phases that combine with the plan must be merged together to create desired objectives and goals. Action phases, according to Bedeian (1993), that support the plan are organizing, staffing and human resource management, leading and interpersonal influence, and controlling (p. 6). When developing strategic plans, Drucker (1990) says ". . . the focus is always on improving the way we work, the way we train. And you need a continuing strategy for doing so" (p. 60). This deals with the research question "What current management practices impact the overall functions and operations of the Physical Plant Maintenance Department at SWTJC?"

The function of planning is more than establishing short, intermediate or long range time zones to carry out a specific plan. Organizing, according to Daft (1994), is the deployment of organizational resources to achieve strategic objectives. This deployment of resources is reflected in the organization's division of labor into specific departments and jobs, formal lines of authority, and mechanisms for coordinating diverse organization tasks. The organizing process leads to the creation of organization structure, which defines how tasks are divided, resources deployed, and departments are coordinated (p. 290).

Staffing and human resource management is the responsibility of both the line officials and staff officials in the organization. Bittel and Ramsey (1985) state that the staff personnel function usually has a major responsibility for coordinating plans, which often involve more than one organizational unit (p. 392). However, involvement of the line organization is necessary to make the plans work effectively. Two organizational structure

charts were designed in this study to show current and proposed staffing of positions within the PPMD.

Leading and interpersonal influence requires different approaches, in varying situations, when developing a strategic plan. Carr (1992) says, "You move from supervisor to leader to teacher to coach to mentor to consultant and mediator" (p. 98). He also says, "Your goal is to move from role to role just far enough ahead of the team to help them grow to the next stage" (p. 98). To develop a strategic plan around this study requires the involvement of supervisory personnel to set the pace, to lead, to guide, and not do the work for others but permit them to function with self-direction. This requires involvement of each team or committee member to build strategies into policy. Walton (1990) quoted W. Edwards Deming as saying, "Making policy . . . hinged on where the goals came from . . . whether the organization was sufficiently disciplined that all employees worked on them" (p. 41). Therefore, to involve everyone in the institution, the plan must be built with attention to the impact the projected changes will have on the organization members.

Costin (1994) poses the question, "What will it take to change?" He states, "To put it bluntly, the shift will not occur if it is not within us. It cannot be faked. It cannot be achieved by public declarations" (p. 70). Costin further states that ". . . my experience is that it can only be caused by small groups of thoughtful leaders . . . where people are committed to a larger purpose and to thinking for themselves" (p. 71). This segment of literature relates to the second research question in this study: "How do these management practices affect the ability of the college to fulfill its primary mission, that of providing educational opportunities for students?"

If current management practices can be improved, the institution can be further improved and will operate more closely within prescribed boundaries of the mission statement. The mission statement of the college (SWTJC 1993-1994 Catalog, p. 14) was established to provide such educational programs and services as needed to achieve the purposes of community colleges as set forth by section 130.003 of the Texas Education Code. Physical plant management

directly affects the mission and purpose of SWTJC to provide such programs and services to its members. This segment of the literature deals with the third research question: "How can the effectiveness of the Physical Plant Maintenance Department be improved?"

Implementing the Strategic Plan

The second subsection of literature review addresses methods and procedures for putting the developed strategic plan into action. This subsection of literature is directed toward the fourth and final question of this study: "What elements should be included in a master plan for future facilities planning, maintenance, and energy management?" This brings forth the issue of staffing within the college in order to support the programs, projects, and other plans developed by the college that includes the PPMD.

Schuler and Youngblood (1986), when addressing Effective Personnel Management (EPM), identified three major strategic purposes of EPM. Those three purposes are productivity, Quality of Work Life (QWL), and legal compliance. They state: "Although some organizations may value one purpose over the others,

increasingly these purposes are becoming directly tied to the goals and purposes of the entire organization" (p. 12). They also say:

> Although EPM managers and specialists can do little to affect the capital, material, and energy aspects that contribute to productivity, they can uniquely influence the utilization of the work force, top management's human resource philosophy and the personnel practices of the organization. (p. 12)

Schuler and Youngblood point out that many employees want more self control and a greater chance to make a contribution to the organization. Also to be considered are the legal issues that arise when implementing a new plan. When changes within the organization affect employees, Schuler and Youngblood (1986) further state that, "Organizations must comply with many laws, executive orders, guidelines, and court decisions in managing their employees" (p. 12).

As changes become necessary during implementation of the plan, the way issues are presented for change becomes important. According to Kayser (1990) the issue should be presented so the focus is on the situation and not on behaviors. "A situational focus virtually eliminates the possibility of the 'personal

attack, defend, counter-attack' spiral that easily can destroy a group session before it really gets underway" (p. 127). Using the situational approach instead of attacking behavior could be used to enhance the quality circle concept.

There is another variable that could impede the implementation of this plan--groupthink (Bartol and Martin, 1991). According to these authors, one disadvantage of people working in groups to build decisions to implement a plan is the tendency to place too much emphasis on gaining agreement. They define groupthink as the tendency in cohesive groups to seek agreement about an issue at the expense of realistically appraising the situation (p. 280). In order to improve decision making for implementing plans, therefore, a personnel manager could be assigned responsibility for the three strategic purposes of productivity, QWL, and legal compliance. The personnel manager could function as a central focal point for the college. This position could provide direction for the departments, divisions, and staff functions of SWTJC.

Another consideration toward implementation of this study is the use of Quality Circles (QCs). QCs

(Certo, 1994) are small groups of people who meet with management to discuss quality related problems on a periodic basis. QCs involve all members of the organization where management asks for ideas from employees in judging and maintaining product or service quality. After the small groups meet and discuss a particular project or issue their recommendations are communicated directly to management at a formal presentation session. The quality circle problem-solving process is described by Certo (1994, pp. 461-462) as a 12 step process:

Step 1: Data--obtained by circle members, specialists, or management

Step 2: Establishment of theme for observation

Step 3: Determination of reason for theme's selection

Step 4: Current state of theme situation

Step 5: Determination of frequency of action in theme

Step 6: Determination of objective of observation

Step 7: Determination of target date

Step 8: Completion of cause analysis

Step 9: Countermeasure

Step 10: Designing and testing of new procedure --alone and against objective in Step 6

Step 11: Setting of target date for implementation

Step 12: Implementation of new procedure

These processes, all or part, can be used to implement the strategic plan developed by this study. The steps considered most important are Step 6 the objective of observation, then Step 7 to ascertain target dates, and Step 10 which requires designing and testing of the new procedure alone and against the objective established in Step 6. These three steps (6, 7, and 10) would lead to Step 11, setting the target dates for implementing the new procedure and Step 12 where the actual implementation is performed. The use of these steps will serve to control the plan as it is set up to determine what objectives should be observed, and what target dates must be set up for each phase of the plan as it is prepared for implementation. Although not shown in the 12 steps, follow up action to determine if newly implemented procedures are working should be established.

Evaluating the Strategic Plan

The third subsection of literature review concerns the methods to use to track, monitor, and evaluate the plan after implementation. The controlling function of management is needed to determine if the proposed plan that is activated is producing the results for which it was designed. Kotter (1990) believes that after target dates have been established and a system designed that can achieve that target, "a control mechanism is created to monitor continuous system behavior versus plan and then take action when a deviation is detected" (p. 62).

This control process, according to Robbins and Kalk (1991), consists of three distinct steps: (1) measuring actual performance, (2) comparing actual performance against a standard, and (3) taking managerial actions to correct deviations or inadequate standards (pp. 566-567). If, for example, quality circles are chosen to implement this plan, the three steps in the control function of management would be a support option to be considered by quality circle groups. The control function can be used to measure actual performance by using personal

observation, statistical reports, oral reports, and written reports.

Then comparisons between the actual performance prescribed in the plan and the standard will indicate whether the range of variation is acceptable. Based on this comparison managers can, according to Robbins and Kalk (1991), "do nothing; they can correct the actual performance; or they can revise the standard" (p. 570).

Before the final corrective measures are taken, based on evaluation of the plan, managers can use a situational analysis procedure such as the one defined by Holt (1993) as a situation that examines external factors and internal conditions of an organization to identify Strengths, Weaknesses, Opportunities, and Threats (SWOT). Holt states that ". . . SWOT is extremely useful for discovering strategic 'shifts' requiring managers to adopt new plans. Therefore if changes or shifts occur during the evaluation phase, strategic SWOT assessment could reveal how to make alterations to the implemented strategic plan" (p. 177).

Thompson and Strickland (1993) describe an evaluation plan that includes reviewing the situation,

and initiating corrective adjustments in mission, objectives, strategy, or implementation in light of actual experience, changing conditions, new ideas, and new opportunities (p. 11).

Evaluation of all facets of physical plant management is necessary to determine if each increment of the implemented strategic plan is serving the purpose for which the plan was developed. This evaluative phase of this study is technically the control phase of the management process. This control phase includes follow up action to ensure that whatever was implemented is in fact producing desirable results. When referring to controlling the solution program, Huber (1980) concludes that "this step is really the program administration step--the monitoring and supervising of a program that has survived implementation and is, we hope, an effective solution to the problem" (p. 19). He further states that "the word 'control' however, indicates that to ensure that this solution is solving the problem, we should compare the actual goal achievement with the desired goal achievement" (p. 19).

Summary

The literature review contains material on the three subsections, or major issues, contained in this study which were (1) Developing the Strategic Plan, (2) Implementing the Strategic Plan, and (3) Evaluating the Strategic Plan. The literature provided insight into the process for establishing the foundation for this study. That foundation consists of developing the strategic plan to deal with the research questions, implementing that plan, and performing follow up actions to evaluate the plan and ascertain whether or not the objectives and goals are being achieved. The key procedure in evaluation is to use effective control measures throughout the implementation and evaluation phases of this project.

Chapter 3

METHODOLOGY AND PROCEDURES

This study was designed around the research problem-solving methodology, using the descriptive method of research. The purpose of this research approach was to describe a system for developing, implementing and evaluating a strategic plan for improving the physical plant management at Southwest Texas Junior College (SWTJC).

There were two instruments designed to collect information for this study. A questionnaire titled, "Interview Questions for Maintenance Personnel at SWTJC" (see Appendix A) was designed and used to collect information on the operation of the Physical Plant Maintenance Department (PPMD). During a personal interview with the Director of Operations, PPMD, responses by the Director to the questions on this instrument were recorded as they were answered.

The other instrument was a survey titled, "Survey of Administrators, Faculty, and Staff Members to Determine Adequacy of Campus Facilities and Services" (see Appendix B). This survey was

sent to 141 administrators, faculty, and staff members at SWTJC to collect information concerning facilities and services that provide the environment for conducting the affairs of the institution.

Four research questions were designed to deal with the major issues posed in this study. Those major issues were (a) developing the strategic plan, (b) implementing the strategic plan, and (c) evaluating the strategic plan to improve physical plant management at SWTJC. The following explanation of the procedures used to answer each of the four research questions is stated below:

Question 1: What current management practices impact the overall functions and operations of the Physical Plant Maintenance Department (PPMD) of Southwest Texas Junior College?

To answer this question a questionnaire was developed and titled "Interview Questions for Maintenance Personnel at SWTJC" (see Appendix A). The Director of Operations, PPMD, was personally interviewed and asked to answer each of the 34 questions listed in this instrument. Each response

given by the Director of Operations was recorded for each of the questions contained on the questionnaire.

The literature review in Chapter 2 shows the necessity of improving strategic planning that affects the current management practices being used at SWTJC. For example, Drucker (1990) says ". . . the focus is always on improving the way we work, the way we train. And you need a continuing strategy for doing so" (p. 60).

Question 2: How do these management practices affect the ability of the college to fulfill its primary mission, that of providing educational opportunities for students?

To answer this question a survey titled, "Survey of Administrators, Faculty, and Staff Members to Determine Adequacy of Campus Facilities and Services" (see Appendix B) was sent to 141 people campus-wide. The responses collected on this survey provided the necessary information to determine how the management practices being used were affecting the ability of the college to

fulfill its primary mission of providing educational opportunities for students.

The mission statement of the college (SWTJC 1993-1994 Catalog, p. 14) was established to provide such educational programs, services, and opportunities for the benefit of the students being served by the institution. Therefore, the function of planning is needed to support the mission of the college and satisfy the requirements of the mission statement.

According to Walton (1990) who quoted W. Edwards Deming as saying "making policy . . . hinged on where the goals came from . . . whether the organization was sufficiently disciplined that all employees worked on them" (p. 41). The answer to this second question is dependent upon the approach to leadership and interpersonal influence used toward those who are involved in developing the strategic plan. Carr (1992) says "you move from supervisor to leader to teacher to coach to mentor to consultant and mediator" (p. 98). He also says "your goal is to move from role to role just far enough ahead of the team to help them grow to the next stage" (p. 98).

Therefore, to involve everyone in the support of this proposed system, the plan must be built with attention to the impact the projected changes will have on the organization members.

Question 3: How can the effectiveness of the Physical Plant Maintenance Department be improved?

The answer to this question was derived from the information collected on both the questionnaire titled, "Interview Questions for Maintenance Personnel at SWTJC" (see Appendix A) and the survey titled, "Survey of Administrators, Faculty, and Staff Members to Determine Adequacy of Campus Facilities and Services" (see Appendix B). The information collected on those two instruments provided insight into the methods and operations for campus facilities and services. The information also revealed the management procedures being used at the college that affected its operation.

Also, two organizational structure charts were developed to show the current staffing of the PPMD and the proposed staffing for the PPMD (see Appendix D and Appendix E). These organizational structure charts were developed to (a) depict

current staffing of the PPMD that, according to personnel in the PPMD, was inadequate, and (b) to show proposed staffing of the PPMD that could lead to improved effectiveness of the department.

The concept of organization structure revision was based on the advice of maintenance personnel and the information collected on the questionnaire (see Appendix A), at the college. This concept is addressed by Bittel and Ramsey (1985) who state that "structure is dynamic and emerges in response to a wide variety of needs, environmental developments, and resource, market, and individual considerations" (p. 644). Therefore, it was considered appropriate to include in these procedures the current and proposed design of the organization structure of the PPMD at the college.

Question 4: What elements should be included in a Master Plan for future facilities planning, maintenance, and energy management?

The elements that were considered necessary for inclusion in a master plan were drawn from the questionnaire (see Appendix A) and from the survey (see Appendix B). Those two instruments were used to collect information from the Director of Operations,

PPMD, and from 125 administrators, faculty, and staff members who responded to the survey. The elements selected for inclusion in a master plan are shown in Chapter 4 of this document (pp. 59-61).

The procedures to be used to implement and evaluate the elements of the Master Plan will be in accordance with the Control Chart for Procedural Elements of the Plan (see Appendix C). This chart was designed to provide a method of control from proposed start and completion dates to actual start and completion dates. As changes become necessary during the implementation and evaluation of the plan, the way the changes are presented becomes important. Kayser (1990) points out that the issues should be presented so the focus is on the situation and not on behaviors. "A situational focus virtually eliminates the possibility of the 'personal attack, defend, counter-attack' spiral that easily can destroy a group session before it really gets underway" (p. 127). Therefore, the procedures and methods used to implement and evaluate the strategic plan should be directed toward the situation and not toward the behaviors of personnel who will implement the plan.

These methods and procedures were used to answer the four research questions and to describe a system for developing, implementing, and evaluating a strategic plan for improving physical plant management at Southwest Texas Junior College (SWTJC).

The questionnaire titled, "Interview Questions for Maintenance Personnel at SWTJC" (see Appendix A), and "Survey of Administrators, Faculty, and Staff Members to Determine Adequacy of Campus Facilities and Services (see Appendix B) were both sent to a panel of experts for informal validation. Each panel member responded to this request, and in their opinion, both instruments were valid. The panel was comprised of the following personnel at SWTJC:

1. Dean of Instructional Services
2. Director, Remedial Writing, Department of English
3. Counselor, Del Rio Campus Center
4. Chairman, Applied Science Division
5. Chairman, Business Administration Division
6. Special Populations Coordinator
7. Director, Department of Research
8. Instructor-Coordinator, Business Management
9. Director, Student Services and Counselor

The changes recommended by the panel of experts were primarily directed toward altering the way questions were stated, expansion of some response categories within some of the questions, and basic phraseology. There were no recommended changes for the instrument shown in Appendix A.

Both surveys were printed for distribution. The following actions were taken before mailing:

1. The questionnaire titled "Interview Questions for Maintenance Personnel at SWTJC" was completed by personal interview with the Director of Operations, PPMD, on February 8, 1994.

2. A Record Control Log was developed to account for each instrument titled "Survey of Administrators, Faculty, and Staff Members to Determine Adequacy of Campus Facilities and Services". Before each was sent out a control number was affixed to the last page of the survey, [Control # ___]. This control number was used to track each copy distributed as reflected on the Record Control Log. The items contained on the Record Control Log were survey number, addressee, title or office, date dispatched, and date received from survey respondent.

When surveys were received from respondents the date received was entered into the Record Control Log. This system provided a complete record of events from date sent to date received from respondents, and made tracking of surveys more simplified.

3. Approximately 60% of the instruments (named in item 2 above) were hand delivered; the other 40% were sent by campus mail service between the dates of February 2 and 3, 1994. A suspense date was entered on page 1 of the survey in the Instructions section as February 10, 1994.

One hundred forty one questionnaires were distributed and 125 were returned by February 22, 1994, for a response rate of 88.65%. This concluded the data collection portion of this study.

All responses to both surveys were tabulated and the results entered onto a master copy of each of the two surveys. This information will be discussed in Chapter 4: Presentation of Results.

Chapter 4

PRESENTATION OF RESULTS

The findings of this study indicated that current management practices are not fully adequate to effectively control the functions and general operations of the Physical Plant Maintenance Department (PPMD) at Southwest Texas Junior College (SWTJC). These findings were based upon the information collected on two survey instruments used in this study.

The first survey instrument was titled "Interview Questions for Maintenance Personnel at SWTJC" (see Appendix A); the other survey instrument was titled "Survey of Administrators, Faculty, and Staff Members to Determine Adequacy of Campus Facilities and Services" (see Appendix B).

The combined information that was produced by these two surveys was used to answer the four research questions posed in this study. The answers to those research questions led to a system for developing, implementing, and evaluating a strategic plan for improving the physical plant management at SWTJC.

Those four research questions are listed in the following narrative along with the results that apply

to each question that were derived from the two surveys used in this study.

Research Question 1: What current management practices impact the overall functions and operations of the Physical Plant Maintenance Department (PPMD) of Southwest Texas Junior College?

The results of the information collected from the questionnaire titled "Interview Questions for Maintenance Personnel at SWTJC" (see Appendix A) provided answers for this question. Each question on the instrument was read aloud by the interviewer and each response from the Director of Operations, PPMD, was recorded on a blank copy of the questionnaire.

The Director of Operations (DO) said there was a need to update current management practices and that staffing of the PPMD was not adequate. He further stated that because of those inadequacies, services required to support the functions and programs of the college were adversely impacted.

The DO was asked if current staffing of the PPMD permitted timely and adequate maintenance service to the two major outreach campuses located in Del Rio and Eagle Pass, Texas. He stated that the PPMD could not provide timely or adequate service because of

understaffing of the department. He also indicated that personnel in the PPMD are not fully trained to give the best maintenance service for the college.

The DO also said the heating and cooling system on the main campus needs to be scheduled for replacement. He agreed that a prioritized listing of projects needing repair or maintenance, with target dates for completion should be developed.

When addressing current management practices pertaining to the quality of maintenance repairs and clean-up after job had been completed, the following results are noted below.

Repairs (116 responses):

poor, 2.59%; fair, 23.28%; good, 60.34%; and excellent, 13.79%.

Clean-up (112 responses):

poor, 9.82%; fair, 23.21%; good, 57.14%; and excellent, 9.82%.

Timeliness of service by the on-campus warehouse for pick-up and delivery of supplies and equipment was rated as shown below.

Pick-up (117 responses):

poor, 1.71%; fair, 18.80%; good, 55.56%; and excellent, 23.93%.

Delivery (116 responses):

poor, 4.31%; fair, 15.52%; good, 56.03%; and excellent, 24.14%.

Adequacy of restrooms, water fountains, and access ramps to serve the needs of handicapped personnel was rated as shown below.

Restrooms (119 responses):

poor, 29.41%; fair, 26.89%; good, 36.13%; and excellent, 7.56%.

Water Fountains (114 responses):

poor, 29.82%; fair, 24.56%; good, 39.47%; and excellent, 6.14%.

Access Ramps (115 responses):

poor, 21.74%; fair, 35.65%; good, 34.78%; and excellent, 7.83%.

The question on how the current policy on vehicle parking serves campus personnel needs as to close proximity to office location and available space upon arrival at the campus, the following responses are noted below.

Close Proximity (121 responses):

poor, 6.61%; fair, 19%; good, 41.32%; and excellent, 33.06%.

Available Space (120 responses):

poor, 18.33%; fair, 25.83%; good, 35%; and excellent, 20.83%.

When asked if personnel had a reserved parking space on campus 125 responses were received with 16% stating they did have a reserved parking space, and 84% stating they did not have a reserved parking space.

Survey participants were asked to rate the general appearance of the campus grounds. The following responses are noted below.

General Appearance of Campus Grounds (125 responses):

poor, 25.60%; fair, 37.60%; good, 32%; and excellent, 4.80%.

Survey participants were also asked to rate the appearance and maintenance of the grounds around primary work location, and consider litter, debris, and condition of lawn and shrubbery. The following responses are noted below.

Appearance/Maintenance of Grounds Around Primary Work Location (124 responses):

poor, 21.77%; fair, 34.68%; good, 38.71%; and excellent, 4.84%.

There were four questions designed in the survey (see Appendix B) and refer to questions 17, 18, 19, and 20 that addressed fire safety at the college. Each question is listed and results are reported as shown below.

Question 17: To what extent are fire extinguishers in your area properly serviced to insure proper charge of the fire extinguisher, or proper operation of the extinguisher?

Proper charge (95 responses):

poor, 18.95%; fair, 22.10%; good, 44.21%; and excellent, 14.74%.

Proper operation (89 responses):

poor, 17.98%; fair, 21.35%; good, 46.07%; and excellent, 14.60%.

Question 18: To what extent have identifying Fire Extinguisher labels (red/white) been placed in a highly visible location near the fire extinguisher device in your area of operation?

Fire extinguisher labels (107 responses):

poor, 28.04%; fair, 16.82%; good, 35.51%; and excellent, 19.63%.

Question 19: What is the adequacy of a fire escape plan, that is clearly posted, that shows the quickest route in case of fire?

Adequacy of fire escape plan (120 responses):

poor, 22.50%; fair, 7.50%; good, 10.83%; excellent, 3.33%; and unknown, 55.83%.

Question 20: How often do you attend safety training briefings on fire hazards, fire escape procedures, and hazardous substances?

Safety training briefings (118 responses):

semi-annually, 2.54%; annually, 6.78%; never attended, 45.76%; and never scheduled, 44.92%.

Research Question 2: How do these management practices affect the ability of the college to fulfill its primary mission, that of providing educational opportunities for students?

The answer to this question is contained in the results derived from both of the survey instruments. In the questionnaire titled "Interview Questions for Maintenance Personnel at Southwest Texas Junior College" (see Appendix A), the DO said that current staffing has an adverse impact on services provided for the college by the PPMD; that staffing conditions do not permit timely and adequate maintenance service

to the Del Rio and Eagle Pass, Texas outreach campuses; and that personnel in the PPMD are not fully trained on the tasks needed to provide timely, quality service to the main campus and the two major outreach campuses. The DO also rated the maintenance service that was being provided to the three college campuses as fair.

The DO said the size of student classrooms was not adequate to support the mission of the college. He also said that office space used by college personnel was not adequate, and that laboratories used for instructional services do not meet the floor space and equipment requirements that are needed for student training.

When asked if the building space that is currently in use for 23 programs/functions used to provide educational support was considered adequate, the DO listed 5 facilities as having adequate space; the other 18 facilities were considered to be inadequate.

The other survey instrument titled "Survey of Administrators, Faculty, and Staff Members to Determine Adequacy of Campus Facilities and Services" (see Appendix B) also provided information used to

answer research question 2. This survey was sent to 141 people and 125 people responded for a response rate of 88.65%.

The results of this survey confirmed some of the responses given by the DO on the questionnaire. For example, when asked if there was adequate office space to conduct the functions required as an administrator, faculty, or staff member, the response rates of the 123 people who answered this question are noted below.

poor, 9.76%; fair, 18.70%; good, 41.46%; and excellent, 30.08%.

When asked if there was adequate conference room, laboratory, classroom, or other work areas to conduct teaching, training, or other activities, the responses are noted below.

Conference room (87 responses):

poor, 22.99%, fair, 20.69%; good, 37.93%; and excellent, 18.39%.

Laboratory (67 responses):

poor, 23.88%; fair, 22.39%; good, 29.85%; and excellent, 23.88%.

Classroom (80 responses):

poor, 13.75%; fair, 20%; good, 47.50%; and excellent, 18.75%.

Other areas (47 responses):

poor, 21.28%; fair, 21.28%; good, 48.93%; and excellent, 8.51%.

The Director of Operations (DO) also said the size of classrooms, office space used by staff, instructors, and administrators to support the mission of the college and laboratories used for instructional services for training students were all inadequate.

The response to questions in the survey (see Appendix B) concerning adequate equipment and furnishings to support teaching, training, and counseling activities in offices, classrooms, and laboratory were considered to be adequate. However, when asked if primary and/or secondary work area was properly heated/cooled the responses for primary work area are noted below.

Heated (118 responses):

poor, 19.49%; fair, 29.66%; good, 38.98%; and excellent, 11.86%.

Cooled (117 responses):

poor, 17.95%; fair, 30.77%; good, 38.46%; and excellent, 12.82%.

Responses for secondary work area are noted below.

Heated (93 responses):

poor, 20.43%; fair, 29.03%; good, 40.86%; and excellent, 9.68%.

Cooled (93 responses):

poor, 22.58%; fair, 25.81%; good, 41.93%; and excellent, 9.68%.

The question on adequacy of janitorial service provided for classroom, restroom, office, hallway, and general use areas was rated as noted below.

Classroom (82 responses):

poor, 13.41%; fair, 37.80%; good, 37.80%; and excellent, 10.98%.

Restroom (114 responses):

poor, 25.44%; fair, 37.72%; good, 27.19%; and excellent, 9.65%.

Office (123 responses):

poor, 17.07%; fair, 42.28%; good, 32.52%; and excellent, 8.13%.

Hallway (98 responses):

poor, 14.28%; fair, 37.76%; good, 37.76%; and excellent, 10.20%.

General use areas (110 responses):

poor, 18.18%; fair, 41.82%; good, 30.91%; and excellent, 9.09%.

When asked about adequacy of lighting in office and classroom the following responses are noted below.

Office (123 responses):

poor, 5.69%; fair, 16.26%; good, 50.41%; and excellent, 27.64%.

Classroom (81 responses):

poor, 4.94%; fair, 13.58%; good, 54.32%; and excellent, 27.16%.

Research Question 3: How can the effectiveness of the Physical Plant Maintenance Department be improved?

The answer to this question is contained in the results of both survey instruments. The results that apply to this question will be described first from the questionnaire (see Appendix A) that was completed by the Director of Operations (DO) Physical Plant Maintenance Department.

When the DO was asked if he served as a member of any committee that addresses the needs of physical plant maintenance and energy management, he responded in the affirmative. He said he was a member of the Long Range Planning Committee for Physical Plant Maintenance and Energy Management, and the Physical Resources Committee. He also said he had attended a conference pertaining to physical resource management within the past year, but the other maintenance personnel had not attended any type of training. Only one maintenance worker had attended a formal course in the discipline of management.

The DO said there was a computer in place in the PPMD, but because of understaffing of personnel in the department there was no one available to train on a computerized maintenance system. Also, that clerical support was only available for ten hours per week.

Space requirements will be further adversely impacted by projected increases in enrollment in the Technical-Preparation program and the North American Free Trade Agreement (NAFTA) will also affect space requirements because of the addition of a truck driving program and a need to expand courses in the English and Spanish languages.

According to the DO, campus vehicle parking for all personnel is not adequate, campus lighting needs improvement, and facilities are not adequate to serve the needs of handicapped personnel. And, the DO stated that special policies are not in place to create more efficient use of energy, especially for heating and cooling for the physical plant. This concludes the results of the questionnaire (see Appendix A) furnished by the DO of the Physical Plant Maintenance Department, that applied to Question 3 of the research questions.

The other survey that provided results to answer Research Question 3 was the survey titled "Survey of Administrators, Faculty, and Staff Members to Determine Adequacy of Campus Facilities and Services" (see Appendix B). The effectiveness of the physical plant can be improved by using the survey results derived from the following questions:

To what extent have you been trained in the rules and procedures in your area dealing with hazardous chemicals, toxic fumes, storage of flammables, poisonous or caustic substances? There were 97 responses and the results are noted below.

poor, 60.82%; fair, 22.68%; good, 16.49%; and the excellent category received no response.

Responses to survey questions concerning the condition of painted walls; serviceability of doors, windows, and locks in the work area; condition of paved areas; and coordination between officials when processing and tracking work order requests sent to maintenance for repairs/services, were all rated as generally adequate.

When asked to rate the insulation for doors and windows to conserve energy consumption in work locations, the responses received are listed below.

Doors (113 responses):

poor, 13.27%; fair, 40.71%; good, 38.05%; and excellent, 7.96%.

Windows (110 responses):

poor, 10%; fair, 40%; good, 40.91%; and excellent, 9.09%.

The responses to the question on adequacy of roofs in preventing water leaks and water damage are noted below.

Adequacy of roofs (119 responses):

poor, 16.81%; fair, 31.09%; good, 36.13%; and excellent, 15.97%.

The water condition and temperature level of the campus swimming pool received generally good to excellent ratings.

Survey responses to the adequacy of the general lighting of the campus with 119 people responding are noted below.

poor, 26.89%, fair, 36.97%; good, 33.61%; and excellent, 2.52%.

The survey responses to the periodic maintenance in replacing burned-out light bulbs inside and outside of buildings are noted below.

Inside of buildings (118 responses):

poor, 7.63%; fair, 32.20%; good, 49.15%; and excellent, 11.02%.

Outside of buildings (111 responses):

poor, 8.11%; fair, 39.64%; good, 45.94%; and excellent, 6.31%.

The results obtained from both surveys (see Appendix A and Appendix B) provided answers to the final research question used in this study:

Research Question 4: What elements should be included in a Master Plan for future facilities planning, maintenance, and energy management?

The Director of Operations (DO), Physical Plant Maintenance Department (PPMD), said he and his assistant director of the PPMD would be available for consultation during the process of developing strategies for facilities planning, maintenance, and energy management of the college. He also agreed there was a need to develop a master plan to address management practices of the PPMD; to support the primary mission of the college; to determine ways to improve the PPMD; and to develop strategies for facilities planning, maintenance, and energy management of SWTJC.

The elements to be included in a master plan for future facilities planning, maintenance, and energy management were drawn from the results of this study. Those 15 elements are listed as follows:

1. A fire safety training program
2. A training program for rules and procedures to deal with hazardous chemicals, toxic fumes, storage of flammables, poisonous or caustic substances
3. Development of a structured training program for maintenance personnel for technical training and/or management training

4. A space management program directed toward buildings and facilities to accomodate the needs of programs and functions (see Appendix A, question 26)

5. An inadequate existing heating and cooling system, and a need to address energy conservation needs

6. Improper application or administration of janitorial services

7. A need for a full review of the staffing situation of the PPMD followed by actions taken that are deemed appropriate

8. Attention is required for the lighting of the campuses

9. Need to draw up plans for providing for the needs of handicapped personnel

10. Need for improvement in maintenance and general upkeep of the campus grounds

11. Need for improvement in general campus maintenance of walkways, streets, parking lots, curbs, serviceability of general building functions such as roof leaks, insulation of doors and windows, door lock functions, and drainage of certain areas

12. Development of a computerized control system to execute the functions of a master plan to correct deficiencies in physical plant maintenance

13. Lack of enforcement of parking policies, something that needs review to determine if an improved system is required

14. Coordination between committees and the correlation of committee information and findings needs improvement

15. Projected student enrollment that will impact space management requirements should have plans developed to deal with increased enrollment

Summary

Current management practices within the Physical Plant Maintenance Department and between levels of management at the college, need some improvement. This is supported by the findings produced by the two instruments used to collect the information for this study. Those instruments were (a) Interview Questions for Maintenance Personnel at SWTJC and (b) Survey of Administrators, Faculty, and Staff Members to Determine Adequacy of Campus Facilities and Services.

The results of this study revealed a number of programs that should be evaluated and included in a

master plan. Therefore, a list of 15 elements was developed and deemed appropriate to include in the plan. Those 15 elements are listed on pages 59-61 of this document.

The four research questions produced results that led to a system for developing, implementing, and evaluating a strategic plan for improving management practices at Southwest Texas Junior College.

Chapter 5

DISCUSSION, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

Discussion of Results

The survey that was completed by the Director of Operations (DO) of the Physical Plant Maintenance Department (PPMD) and the survey that was completed by 125 administrators, faculty, and staff members of SWTJC indicated that 88.65% of respondents to this survey recognize the major problems at SWTJC. These results are representative of the opinions of the personnel who comprise the general membership of the college. This further indicates that the majority of the people at SWTJC have a vested interest in the improvement of facilities, services, and general management of programs and systems of the college.

This information collected on these two surveys (see Appendixes A and B) provided answers to the four research questions posed in this study. Those research questions and the answers obtained for each from the information collected on the two surveys are discussed in the following narrative.

The results of the information collected from the questionnaire titled "Interview Questions for

Maintenance Personnel at SWTJC" (see Appendix A) provided answers to the first research question, What current management practices impact the overall functions and operations of the Physical Plant Maintenance Department (PPMD) of Southwest Texas Junior College?

The DO said there was a need to update current management practices and that staffing of the PPMD was not adequate. He further stated that because of those inadequacies in staffing that services required to support the functions and programs of the college were adversely impacted. He also stated that the PPMD could not provide timely or adequate service, because of understaffing, to the two major outreach campuses located in Del Rio and Eagle Pass, Texas.

The DO also said the heating and cooling system on the main campus needs to be scheduled for replacement. He agreed that a prioritized listing of projects needing repair or maintenance, with target dates for completion, should be developed.

The results of the survey instrument titled "Survey of Administrators, Faculty, and Staff Members to Determine Adequacy of Campus Facilities and

Services" (see Appendix B) also provided answers to the first research question.

When addressing current management practices pertaining to the quality of maintenance repairs and clean-up after job had been completed, the majority of responses for both maintenance repairs and clean-up were rated as good.

The timeliness of service by the on-campus warehouse for pick-up and delivery of supplies and equipment was rated as good by over one-half of the respondents. Most responses for adequacy of restrooms, water fountains, and access ramps to serve the needs of handicapped personnel were mostly in the poor, fair, or good categories. The excellent category for these areas was rated between a percentage range of 6.14% and 7.83%.

The question on how the current policy on vehicle parking serves campus personnel needs as to close proximity to office location and available space upon arrival at the campus was rated as good by over 41%, and as excellent by over 33% of those responding for the close proximity category. However, the category for available parking space received a wide

distribution of ratings. Those ratings, by category, are noted below:

poor, 18.33%; fair, 25.83%; good, 35%; and excellent, 20.83%.

And only 16% of respondents stated they did have a reserved parking space, and 84% stated they did not have a reserved parking space.

The fire safety program at the college received the following ratings by category listed.

Properly charged fire extinguishers:

poor, 18.95%; fair, 22.10%; good, 44.21%; and excellent, 14.74%.

Proper operation of fire extinguishers:

poor, 17.98%; fair, 21.35%; good, 46.07%; and excellent, 14.60%.

Placement of Fire Extinguisher labels (red/white):

poor, 28.04%; fair, 16.82%; good, 35.51%; and excellent 19.63%.

The lowest ratings received for the fire safety program were in the areas of (a) adequacy of a fire escape plan, with 55.83% of responses in the unknown category and (b) attendance at fire safety training briefings with 45.76% of respondents stating they had never been scheduled to attend fire safety training.

The second research question, "How do these management practices affect the ability of the college to fulfill its primary mission, that of providing educational opportunities for students?" was answered by information collected on both survey instruments (see Appendixes A and B).

The DO said that current staffing has an adverse impact on services provided for the college by the PPMD; that staffing conditions do not permit timely and adequate maintenance service to the Del Rio and Eagle Pass outreach campuses; and that personnel in the PPMD are not fully trained on the tasks needed to provide timely, quality service to the main campus and the two major outreach campuses. The DO also rated the maintenance service that was being provided to the three college campuses as fair.

The DO said the size of student classrooms was not adequate to meet the requirements to support the mission of the college. He also said that office space used by college personnel was not adequate, and that laboratories used for instructional services do not meet the floor space and equipment requirements that are needed for student training. This is especially an area of inadequacy for the Del Rio

campus since additional instructors have been hired but existing office space will not accomodate the newly hired personnel.

When the DO was asked to rate the adequacy of building space that is currently in use for 23 programs and functions used to provide educational support, he rated 5 facilities as adequate and 18 facilities as inadequate.

The other survey (see Appendix B) that was completed by 125 administrators, faculty, and staff members also provided information used to answer the second research question. Some of the responses received on this survey were in agreement with some of the responses given by the Director of Operations (DO) on the survey titled "Interview Questions for Maintenance Personnel at SWTJC" (see Appendix A).

For example, when respondents to the instrument titled "Survey of Administrators, Faculty, and Staff Members to Determine Adequacy of Campus Facilities and Services" (see Appendix B) were asked if there was adequate conference room, laboratory, classroom, or other work areas to conduct teaching, training, or other activities, their responses in the poor and

and fair categories 22.99% and 20.69% for conference rooms, 23.88% and 22.39% for laboratory, 13.75% and 20% for classrooms, and 21.28% and 21.28% for other areas, respectively. This shows that over 20% of the conference rooms, classrooms, laboratories, or other work areas at the college were rated as poor, and over 21% were rated as fair.

The responses to questions in the survey (see Appendix B) concerning adequate equipment and furnishings to support teaching, training, and counseling activities in offices, classrooms, and laboratories showed these areas to be adequate. However, when asked if the primary and/or secondary work area was properly heated/cooled the responses showed there were some inadequacies in those areas. The average ratings for heating/cooling were over 20% in the poor category and over 28% in the fair category, compared to over 40% in the good category and over 11% in the excellent category.

The question on adequacy of janitorial service provided for classroom, restroom, office, hallway, and general use areas received an average rating for these five areas of poor, 17.68%; fair, 39.47%; good, 33.24%; and excellent, 9.61%

The answer to the third research question, "How can the effectiveness of the Physical Plant Maintenance Department be improved?" was derived from the results of both survey instruments shown in Appendixes A and B.

The DO stated he was a member of two committees at the college: The Long Range Planning Committee for Physical Plant Maintenance and Energy Management, and the Physical Resources Committee.

Although the DO had attended a conference pertaining to physical resource management within the past year, his other maintenance personnel had not attended any type of training. Only one maintenance worker had attended a formal course in the discipline of management.

The DO said there was a computer in place in the Physical Plant Maintenance Department (PPMD), but because of understaffing of personnel there was no one available to train on a computerized maintenance system. Clerical support for the PPMD is limited to ten hours per week.

Space requirements are expected to be further adversely impacted by projected increases in enrollment in the Technical-Preparation program and

the North American Free Trade Agreement (NAFTA) will affect space requirements with the addition of a truck driving program scheduled to begin in September 1994. Also the need to expand courses in the English and Spanish languages because of increased affiliation between members of NAFTA, has been recognized.

Campus vehicle parking for all personnel was shown to be inadequate; campus lighting needs improvement; facilities are not adequate to serve the needs of handicapped personnel; and policies are not in place to create more efficient use of energy, especially for heating and cooling for the physical plant.

The extent of training in the rules and procedures for dealing with hazardous chemicals, toxic fumes, storage of flammables, poisonous or caustic substances was rated as poor by over 60% of respondents.

The condition of painted walls; serviceability of doors, windows, and locks in the work area; condition of paved areas; and coordination between officials when processing and tracking work order requests sent to maintenance for repairs/services were all rated as generally adequate. However,

insulation for doors and windows to conserve energy consumption in work locations, and adequacy of roofs to prevent water damage in buildings was rated within the range of fair to good.

The adequacy of general lighting of the campus was rated more as poor/fair than as good/excellent. Replacement of burned-out light bulbs inside and outside of buildings received a majority of responses in the fair/good categories.

The fourth and final research question, "What elements should be included in a Master Plan for future facilities planning, maintenance, and energy management?" was answered from the results received in both survey instruments (see Appendixes A and B).

The elements to be included in a master plan for future facilities planning, maintenance, and energy management were drawn from the results of this study. There were 15 elements selected for inclusion in the Master Plan. Those 15 elements are listed as follows:

1. A fire safety training program

2. A training program for rules and procedures to deal with hazardous chemicals, toxic fumes, storage of flammables, poisonous or caustic substances

3. Development of a structured training program for maintenance personnel for technical training and/or management training

4. A space management program directed toward buildings and facilities to accomodate the needs of programs and functions (see Appendix A, question 26)

5. An inadequate existing heating and cooling system, and a need to address energy conservation needs

6. Improper application or administration of janitorial services

7. A need for a full review of the staffing situation of the PPMD followed by actions taken that are deemed appropriate

8. Attention is required for the lighting of the campuses

9. Need to draw up plans for providing for the needs of handicapped personnel

10. Need for improvement in maintenance and general upkeep of the campus grounds

11. Need for improvement in general campus maintenance of walkways, streets, parking lots, curbs, serviceability of general building functions such as

roof leaks, insulation of doors and windows, door lock functions, and drainage of certain areas need to be set to a plan of action

12. Development of a computerized control system to execute the functions of a master plan to correct deficiencies in physical plant maintenance

13. Lack of enforcement of parking policies, something that needs review to determine if an improved system is required

14. Coordination between committees and the correlation of committee information and findings needs improvement

15. Projected student enrollment that will impact space management requirements should have plans developed to deal with increased enrollment

These results, therefore, have provided information to build strategic action plans that can be used to reverse the problems and deficiencies discovered in this study. These findings also mean that top level managers should become actively involved during the design and development phase of the Master Plan. The Master Plan should not be used as a temporary solution to solve one or two problems

outlined herein, but should be put into action and tracked until all problems are resolved.

The plan, as with any other plan, will work to solve these problems only if it is carefully analyzed, implemented, and continually monitored until each phase is brought to complete resolution. The controlling process of management to ensure the activated plan flows in accordance with the proposed plan is a critical step in the process.

In a previous study concerning physical plant operations, Box (1992) stated

> . . . that management procedures were not in place to adequately describe and direct a preventive, periodic, or scheduled maintenance system relating to specified functions such as air conditioning, heating, lighting, and the general upkeep of buildings and grounds. (p. 5)

The situation described by Box (1992) has not changed. Goals and objectives may be devised, but a plan of action must be developed to carry those goals and objectives to conclusion. Therefore, a comprehensive set of plans carefully prepared with reasonable time phases must be established and a suspense control system designed that will serve to periodically require evidence that progress is being made. The Control Chart for Procedural Elements of

the Plan (see Appendix C) was designed for use when implementing this control system.

Conclusions

The major issues that were addressed in this study were (a) strategic planning processes, (b) strategic plan implementation, and (c) strategic plan evaluation. These major issues were studied to determine how current management practices can be updated and incorporated into a master plan to be used in future facilities planning, maintenance, and energy management at SWTJC. The results of this study have revealed that current management practices need to be revised in order to provide necessary support for the college mission.

This study has provided information that will permit managers at the strategic levels or higher levels within the institution to set in motion those strategic plans needed to bring these problems to resolution. A master plan is needed to plan, organize, direct, motivate, and control the various functions that need corrective action, and to deal with the personnel who will be used to implement these policies, programs, and procedures However,

this is not a single-handed project. This project will require a concerted effort by a substantial number of people. Leadership will be required from all levels of management within the college to ensure successful conclusions are derived from this project. This includes leadership involvement from the main campus and the two major outreach campuses located in Del Rio and Eagle Pass, Texas.

These managerial problems are not recent occurrences, but have been ongoing problems for a protracted period of time. For example, there was no evidence that any type of formalized training program ever existed to develop the skills of workers in the PPMD.

It is concluded, therefore, that if the identified trend of management is to be reversed, it must receive the full support from all levels of management in a fully coordinated manner. This reversal will not be realized in a short term "quick-fix" approach but will require a patient, methodical, and systematic application increment by increment until a successful solution is derived.

Finally, despite the results of this study identifying a number of problematic situations,

Southwest Texas Junior College has a strong and proficient group of leaders. The self-study currently underway has shown there are many strengths within the infrastructure of the college and personnel who are willing to resolve the problems within the institution.

Implications

As improvement begins to occur, and programs, systems, and techniques begin to function more effectively, the morale of personnel at the college will be enhanced. Effectively applied managerial procedures will produce favorable consequences in that the mission statement and purpose of Southwest Texas Junior College will be achieved.

It is essential that each faculty member, administrator, and staff member realize that the mission of the college is to provide a service to our most important resource -- the student.

It is also realized that many implications are to be considered in the services SWTJC is charged with providing. There must be adequate classrooms, laboratories, office space, and conference rooms with the necessary furnishings and equipment. It is also

important that these areas are appropriately heated and cooled, kept in a state of cleanliness, and adequately maintained to function properly. It is frequently difficult to differentiate between the wants and needs of personnel so the best and most important services are provided.

Safety programs are essential to provide a safe environment for all campus personnel as well as serving the needs of handicapped personnel, a well administered vehicle parking system, and proper lighting of outside buildings must be given proper priority.

Another concern of campus personnel is the generally deteriorating appearance of the campus grounds. This has a negative impact on morale and results in projecting less than the desired image to others who visit this professional institution.

Recommendations for Implementation

This study has provided the necessary foundation to support an aggressive program to improve the deficiencies discovered during this research. The problems described can be corrected, but a dedicated, determined, and concerted approach must be initiated by top level managers. The leadership should set up

achievable objectives and goals and a system to provide accurate monitoring of those milestones until goals are realized.

It is recommended that a special committee be appointed by the President of SWTJC and charged with developing a strategic plan of action to correct the problems identified herein. It is further recommended that the committee consider the following suggestions when formulating strategic initiatives:

1. A top priority item that should be addressed and implemented without delay is a fully developed fire safety program. This program should include a training program on fire safety for all personnel; a schedule to monitor fire extinguisher devices for proper charge and operating condition; fire escape diagrams, visibly posted, to show proper egress procedures from all buildings; designation of all locations where fire extinguishers should be installed; drafting of a schematic to identify the precise location of each fire extinguisher device; and the use of a suspense system to control the administration of all phases of this safety program.

2. A firm time-table should be set up to alter existing facilities or construct facilities to

provide complete services for handicapped personnel at all three campus locations.

3. An intensive in-house training program for workers in the Physical Plant Maintenance Department (PPMD) should be designed. Training records should be developed and all technical training, in-house training, or other training received from outside sources should be documented.

4. The current staffing situation shown in Figure 1, Current Organizational Structure Chart of the Physical Plant Maintenance Department (see Appendix D) should be reviewed and proposed staffing changes shown in Figure 2, Proposed Organizational Structure Chart (see Appendix E) should be compared. A summary of the recommended changes is (a) convert the Administrative Clerk, 10 hours per week to Administrative Clerk, 20 hours per week. This will provide the additional hours needed for data entry into a computerized maintenance control system, as well as other duties of answering telephone communications, filing, tracking work orders, and receptionist activities.

Computer competency training, if needed, could be realized by enrolling this clerk in a data

processing course taught on the main campus; and (b) adding an Assistant Director, PPMD/Energy Management Coordinator. This position will provide backup management for the Director of Operations, PPMD, and coordination of energy management on the three campuses of SWTJC and monitoring of the PPMD training program; (c) changing the Carpenter position from temporary full time to permanent full time; (d) adding a custodian position, increasing custodial workers from seven to eight full time persons; and (e) add four grounds worker positions, or negotiate a contract with an off campus agency to provide grounds maintenance.

The above recommendations on staffing were coordinated with the Director of Operations, PPMD. These changes are needed to provide the necessary support for administering the various duties and responsibilities charged to the PPMD. The two Organizational Structure Charts (Appendixes D and E) should be included in the master plan.

5. Plans should be developed to (a) replace the existing heating and cooling system on main campus; (b) construct or improve buildings; (c) study space

management for all three campuses and make the appropriate recommendations; (d) improve campus grounds and janitorial services; (e) provide adequate lighting for campuses; (f) set up a vehicle parking system; (g) brief personnel on handling, using, and storing chemicals, flammables, or toxic substances; (h) monitor and control all maintenance service to include scheduled, preventive, and periodic maintenance.

6. A plan to design and implement these changes should be developed. Budget requirements, project start dates and completion dates for major projects should be established. This plan should include materials and special staffing needs to support this system.

The Control Chart for Procedural Elements of the Plan (see Appendix C) should be used to chart the elements that will comprise the Master Plan. This control chart is designed as a flexible instrument that can be modified to fit any strategic plan and give a descriptive account of each strategic initiative by listing the initiative in the procedural elements section contained on the control chart.

The control chart can be stored in the PPMD computerized system and used for a variety of programs from the construction of a plan to a routine task of the periodic replacement or cleaning of air conditioning unit filters or periodic monitoring of fire extinguisher operation. Training of maintenance personnel, central work order control, tracking a major plan to replace the heating/cooling system; preventive, periodic, and scheduled maintenance, the construction of buildings, procurement of land for building sites, purchase of equipment and materials, warehouse operations, employee evaluations, and even the department budget can be controlled with this one basic document.

The versatility of a control chart allows for a wide range of controls with minimum effort expended and will produce more effective managerial procedures. And, more effective managerial controls could offset to some degree the understaffing problem. An orderly, systematically designed program could lead to improved service and grow into a level of proficiency that could solve some of the current problems in the PPMD. And the cost to implement this system is

minimal since a computer is already in place in the PPMD, adequate software is available, and training of an employee to operate the system can be provided on campus.

Furthermore, the control chart provides for evaluation of the strategies developed from this study (see Item 5, Procedural Elements of the Plan on page 2 of the Control Chart -- Appendix C). The statement shown in Item 5, "Evaluate performance, review the situation, initiate corrective adjustments," is intended for use in evaluating each element of the strategic plan as it is formulated. Item 5 will also be used as a follow up procedure to monitor progress of plans and evaluate effectiveness.

In addition to the above recommendations, the Master Plan should be submitted to the President of SWTJC for approval, and, if deemed necessary, the recommendations of the President should be forwarded to the Board of Trustees of SWTJC for their review, discussion, and comments. This broad based plan must be sanctioned by higher level managers in order for the elements of the plan to be carried out to completion. This type of plan will need financial,

material, and human resources that are controlled at the strategic apex of the college.

Appropriate decisions should be formulated to begin the lengthy process of improvement for the college.

Dissemination

This research study will be presented to the President of Southwest Texas Junior College for possible dissemination to the Board of Trustees of SWTJC. Copies will be furnished to all appropriate administrative personnel at the college, and a copy will be placed in the college library for possible review by the self-study committee.

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APPENDIXES

Appendix A

Interview Questions for Maintenance Personnel at Southwest Texas Junior College

The following questions are designed to collect information on management practices used to operate the physical plant; how the primary mission of the college is affected in providing educational opportunities for students; how the Physical Plant Maintenance Department can be improved; and to determine the elements to include in a Master Plan for future facilities planning, maintenance, and energy management.

1. Do you, as Director of Operations Physical Plant Maintenance Department (PPMD), see a need to update current management practices used to direct the functions and operations of the physical plant at Southwest Texas Junior College (SWTJC)?

____ Yes ____ No

2. Do you consider the staffing of the PPMD to be adequate?

____ Yes ____ No

3. Does current staffing have an adverse impact on services provided to the college by the PPMD?

____ Yes ____ No

4. Is the PPMD overstaffed?

____ Yes ____ No

5. Is the PPMD understaffed?

____ Yes ____ No

6. Do current staffing conditions permit timely, and adequate maintenance service to the Del Rio, Texas outreach campus?

____ Yes ____ No

7. Do current staffing conditions permit timely, and adequate maintenance service to the Eagle Pass, Texas outreach campus?

____ Yes ____ No

8. Are personnel in the PPMD fully trained on the tasks needed to provide timely, quality service to the main campus and the two major outreach campuses?

____ Yes ____ No

9. How do you perceive maintenance service that is currently being provided to the three college campuses?

___ Poor ___ Fair ___ Good ___ Excellent

10. Does the college need to replace the current heating/cooling system on main campus?

____ Yes ____ No

11. Would you and your Assistant Director of PPMD be available for consultation during the process of developing strategies for facilities planning, maintenance, and energy management of the college?

____ Yes ____ No

12. Would it be feasible to develop a prioritized listing, with target dates for completion, of facilities that need improvement, expansion, or that should be constructed?

____ Yes ____ No

13. Have you contacted other colleges to find out what strategies they have developed for physical resources management, to include energy management?

____ Yes ____ No

14. Have you discussed the need for construction of physical facilities on the main campus, or at the two major outreach campuses of Del Rio and Eagle Pass with officials at SWTJC?

____ Yes ____ No

15. Do you serve as a member of any committee that addresses the needs of physical plant maintenance and energy management?

____ Yes ____ No

16. If the answer to Question 15 is (No):

(a) Do you believe a committee should be appointed to study the needs of physical resources, energy management, and physical plant maintenance?

____ Yes ____ No

(b) If the answer to Question 15 is (Yes), what is/are the name(s) of the committee(s) you are currently a member?

17. Have you attended any type of conference, seminar, or training class pertaining to physical resource management within the past year?

____ Yes ____ No

18. Have any of your maintenance personnel attended any type of conference, seminar, or training class pertaining to physical resource management within the past year?

____ Yes ____ No

19. How many of your maintenance personnel have completed formal college course credit in the discipline of management?

___None ___1-2 ___3-4 ___5-6 ___ 7 or more

20. Do you currently have a computer system to process the various functions of the physical plant maintenance department?

____ Yes ____ No

21. If the answer to Question 20 is (No)

(a) Do you have a need for a computer system to support the programs of the PPMD?

____ Yes ____ No

If the answer to Question 20 is (Yes)

(b) Do you have personnel available to train to operate a computerized maintenance system?

____ Yes ____ No

22. Do you have clerical or secretarial support for the PPMD?

____ Yes ____ No

23. Is the size of student classrooms, currently being used, classified as adequate to support the mission of the college?

____ Yes ____ No

24. Is office space used by staff, instructors, and administrators classified as adequate to support the mission of the college?

____ Yes ____ No

25. Do laboratories used for instructional services meet the floor space and equipment requirements that are adequate for student training?

____ Yes ____ No

26. Is the building space, currently used by the following programs/functions considered to be adequate?

(a) Regional Law Enforcement Academy ____ Yes ____ No

(b) Cosmetology ____ Yes ____ No

(c) Nursing Program ____ Yes ____ No

(d) Applied Science Division ____ Yes ____ No

(e) Aviation Department ____ Yes ____ No

(f) Automobile Mechanics ____ Yes ____ No

(g) Business Administration Division ____ Yes ____ No

(h) Computer Center ____ Yes ____ No

(i) Will C. Miller Memorial Library ____ Yes ____ No

(j) Student Center ____ Yes ____ No

(k) Student Dormitories ____ Yes ____ No

(l) Gymnasium ____ Yes ____ No

(m) Outdoor Recreational Areas ____ Yes ____ No

(n) Warehouse ____ Yes ____ No

(o) Del Rio Outreach Campus ____ Yes ____ No

(p) Eagle Pass Outreach Campus ____ Yes ____ No

(q) Humanities and Fine Arts ____ Yes ____ No

(r) Student Support Services ____ Yes ____ No

(s) Registrar ____ Yes ____ No

(t) Social Studies Division ____ Yes ____ No

(u) Science and Mathematics Division ____ Yes ____ No

(v) Agriculture ____ Yes ____ No

(w) Institutional Research Department ____ Yes ____ No

27. The Technical Preparatory (Tech-Prep) program that is being implemented will increase student enrollment in the near future. Will this increase in enrollment impact current classroom space requirements, and is a plan being developed to address this issue?

____ Yes ____ No

28. Is campus vehicle parking for administrators, faculty, staff, and student personnel adequate?

____ Yes ____ No

29. Are the buildings maintained in a state of cleanliness by janitorial service personnel?

____ Yes ____ No

30. Are the campus grounds maintained to provide a safe, well lighted, uncluttered, and eye appealing appearance?

____ Yes ____ No

31. Are facilities available to serve the needs of handicapped or disadvantaged personnel?

____ Yes ____ No

32. Are there special policies in place to create more efficient use of energy, especially for heating and cooling, for the physical plant?

____ Yes ____ No

33. Is the equipment used by the PPMD adequate to provide required services for the upkeep of buildings and grounds of the physical plant?

____ Yes ____ No

34. Do you believe the development of a Master Plan to address management practices of the PPMD; how the primary mission of the college is affected in providing educational opportunities for students; how the PPMD can be improved; and the development of strategies for facilities planning, maintenance, and energy management is a necessary endeavor?

____ Yes ____ No

--- END OF INTERVIEW ---

Appendix B

Survey of Administrators, Faculty, and Staff Members to Determine Adequacy of Campus Facilities and Services

Note. Choose only one answer that best describes the conditions outlined in each portion of the questions in the survey instrument.

1. Do you have adequate office space to conduct the administrative functions required of your position as and administrator, faculty, or staff member?

12 poor 23 fair 51 good 37 excellent

Comments. Cramped office (#84); furniture not adequate; need more briefing rooms.

2. Do you have an adequate conference room, laboratory, classroom, or other work area to conduct teaching, training, or other activities?

Conference Room	Laboratory	Classroom	Other
20 poor	16 poor	11 poor	10 poor
18 fair	15 fair	16 fair	10 fair
33 good	20 good	38 good	23 good
16 excellent	16 excellent	15 excellent	4 excellent

Comments. (see next page)

Legend. (#) denotes Control Number on survey.

Do not have space for Continuing Education; Library could use a small conference room; need more dressing space in gymnasium; need larger classroom to use multi-media (#24); literacy lab has small carrells in disrepair; Wagner Building not adequate; need larger testing room (#3); chalkboards need to be replaced with dry erase boards (#35).

3. Do you have adequate equipment or machines to support teaching, training, counseling or other educational activities?

Teaching	Training	Counseling	Other
7 poor	11 poor	8 poor	9 poor
21 fair	14 fair	20 fair	12 fair
41 good	36 good	27 good	28 good
18 excellent	16 excellent	10 excellent	9 excellent

Comments. Could use a computer/printer in library; need tutoring cubicles; each division should have copy machine; have only five computers for 25 students; need large screen projector; instructors performing as counselors during registration need computerized college catalog degree plans.

4. Do you have necessary furnishings, in good repair, for your office, classroom, laboratory, or other required work area?

Office	Classroom	Laboratory	Other
3 poor	5 poor	4 poor	4 poor
27 fair	23 fair	21 fair	16 fair
59 good	39 good	25 good	29 good
20 excellent	12 excellent	8 excellent	6 excellent

Comments. Need storage area in classroom; tables in cafeteria need repair.

5. Is your primary and/or secondary work area properly heated/cooled? [List primary work area and/or secondary work area in the space provided, then mark only one answer under each category shown below the primary and/or secondary work area]

Primary Work Area: [_____]		Secondary Work Area: [_____]	
Heated	Cooled	Heated	Cooled
23 poor	21 poor	19 poor	21 poor
35 fair	36 fair	27 fair	24 fair
46 good	45 good	38 good	39 good
14 excellent	15 excellent	9 excellent	9 excellent

Comments. Too hot or too cold; timers usually set wrong; air conditioning units in Kincaid Building are 29 years old and are down frequently.

6. How do you rate janitorial service provided for:

Classroom:	11 poor	31 fair	31 good	9 excellent
Restroom:	29 poor	43 fair	31 good	11 excellent
Office:	21 poor	52 fair	40 good	10 excellent
Hallway:	14 poor	37 fair	37 good	10 excellent
General Use Areas:	20 poor	46 fair	37 good	10 excellent

Comments. General comments ranged from opinions that janitors need counseling and inspection of work to various areas described as needing more attention.

7. How adequate is the lighting in your office/ classroom?

Office	Classroom
7 poor	4 poor
20 fair	11 fair
62 good	44 good
34 excellent	22 excellent

Comments. Lighting poor in many areas.

8. How do you rate the quality of general maintenance repair work performed in your area of responsibility?

11 poor 43 fair 49 good 16 excellent

Comments. Too much paperwork; takes too much effort to get repairs done; work left unfinished; poor clean-up; classroom needs new ceiling tiles/paint (#24).

9. When submitting work orders to the Physical Plant Maintenance Department, what is the response time by maintenance personnel to perform repair/service?

75 3-10 days 10 11-18 days

3 19-26 days 17 26 or more days

Comments. Do not know; sometimes work orders have to be sent twice; extended time to get AC/Heat back into offices (#18); work order has been in for extended period of time (#118); response time varies.

10. How do you rate the quality of maintenance repairs and clean-up after job has been completed?

Repair		Clean-up	
3	poor	11	poor
27	fair	26	fair
70	good	64	good
16	excellent	11	excellent

Comments. Do not know; no preventive maintenance; sometimes repair crews will wait for maintenance to clean-up.

11. How do you rate the timeliness of service by the on-campus warehouse for pick-up/delivery of supplies and equipment?

Pick-up		Delivery	
2	poor	5	poor
22	fair	18	fair
65	good	65	good
28	excellent	28	excellent

Comments. Need a better vehicle to transport supplies on campus; work study personnel sometimes leave packages on counter tops without giving notice; and have no need for this service.

12. Are restrooms, water fountains, and access ramps adequate to serve the needs of handicapped personnel?

Restrooms	Water Fountains	Access Ramps
35 poor	34 poor	25 poor
32 fair	28 fair	41 fair
43 good	45 good	40 good
9 excellent	7 excellent	9 excellent

Comments. No access to Registrar; ramp too steep (#29); unknown; ramps need attention; no ramps to Garner Hall dormitory; water fountains/restrooms not accessible for handicapped (Tate, Miller, and Garner Hall buildings); no access to upstairs weight room in gymnasium.

13. How does the current policy on vehicle parking serve your needs? [Close proximity to your office, and available space when you arrive]

Close Proximity	Available Space
8 poor	22 poor
23 fair	31 fair
50 good	42 good
40 excellent	25 excellent

Comments. Have parking space but it is taken by students; parking rules not enforced; parking space is poor during registration.

14. Do you have a reserved parking space on campus?

20 Yes 105 No

Comments. Students take parking spaces (Main Campus and Del Rio Campus); need reserved spaces to prevent stress and frustration.

15. How do you rate the general appearance of the campus grounds?

32 poor 47 fair 40 good 6 excellent

Comments. Maintenance personnel should be required to attend Total Quality Management (TQM) workshop; too much litter; dry, looks dead -- looks poor most of the time; infrequent mowing of grass; last two years campus has gone down; and campus needs drastic improvement to project proper image.

16. How do you rate the appearance and maintenance of the grounds around your primary work location? [Consider litter, debris, and condition of lawn and shrubbery]

27 poor 43 fair 48 good 6 excellent

Comments. Replace and water shrubbery; cigarette butts, litter, and trash on lawn; trash in hallways.

17. To what extent are fire extinguishers in your area properly serviced to insure proper charge of the fire extinguisher, or proper operation of the extinguisher?

Charge	Operation
18 poor	16 poor
21 fair	19 fair
42 good	41 good
14 excellent	13 excellent

Comments. Do not know (29 responses); no fire extinguisher in Plato laboratory; extinguisher on floor unmounted; extinguishers not serviced since August 1990, March 1992, and September 1992.

18. To what extent have identifying Fire Extinguisher labels (red/white) been placed in a highly visible location near the fire extinguisher device in your area of operation?

30 poor 18 fair 38 good 21 excellent

Comments. Labels have not been posted; do not know or unknown (10 responses); do not have labels in area; extinguishers are not strategically placed.

19. What is the adequacy of a fire escape plan, that is clearly posted, that shows the quickest route in case of fire?

27 poor 9 fair 13 good 4 excellent

67 unknown

Comments. Back door to library poses a hazard (it is locked); no plan posted (10 responses); just exit signs are posted; if fire broke out in storage room, people in back room likely would not escape (#33).

20. How often do you attend safety training briefings on fire hazards, fire escape procedures, and hazardous substances?

3 semi-annually 8 annually

67 never attended 65 never scheduled

Comments. We should have safety meetings at least once a month; received one briefing in 30 years; every two years we see a film on safety first (#143); previous years we were briefed at faculty meetings.

21. To what extent have you been trained in the rules and procedures in your area dealing with hazardous chemicals, toxic fumes, storage of flammables, poisonous or caustic substances?

59 poor 22 fair 16 good Ø excellent

Comments. Never attended training (17 responses); minor training; have been told to read the labels; hazardous list was posted a few years ago but not now; have a brochure on this at the gymnasium; no reason to be trained.

22. How do you rate the condition of painted walls and the serviceability of doors, windows, and locks in your work area?

9 poor 36 fair 70 good 9 excellent

Comments. Door to registrar is hard to lock/unlock; locking mechanism needs lube (#84); unpainted walls need paint and locks need repair.

23. What is the condition of paved areas (walkways, parking lots, curbing, and streets) that you use?

Walkways	Parking Lots	Curbing	Streets
9 poor	4 poor	1 poor	3 poor
33 fair	27 fair	27 fair	31 fair
65 good	75 good	81 good	78 good
18 excellent	18 excellent	15 excellent	12 excellent

Comments. Remove speed bumps (4 responses); it is difficult for handicapped people to get around; walkway floods at Garner Science building; sidewalks broken, large cracks; parking lot floods; need seal-coat and striping (#84); walkway floods at the gymnasium.

24. How do you rate the insulation for doors and windows to conserve energy consumption in your work locations?

Doors	Windows
15 poor	11 poor
46 fair	44 fair
43 good	45 good
9 excellent	10 excellent

Comments. Do not know (3 responses); doors need weather stripping; warehouse has no insulation at all; windows not insulated in Wagner computer center; water comes in door when it rains.

25. What is the adequacy of roofs, in preventing water leaks/water damage, in the building(s) you occupy?

20 poor 37 fair 43 good 19 excellent

Comments. Leaks in classroom and computer room (Del Rio Campus); ceiling leaks in lab and office (#78); ceiling leaks in copy room in Wagner building; roof leaks in Anderson building; some small leaks; water comes in at roof/window; do not know.

26. How would you rate the timely coordination between yourself and other officials when processing and tracking work order requests sent to maintenance for repairs/services?

6 poor 33 fair 70 good 6 excellent

Comments. Do not know (3 responses); send second and third work order for same job; no one knows where work order has gone (tracking).

27. How do you rate the water condition and temperature of the campus swimming pool?

Water Condition	Temperature Level
2 poor	4 poor
6 fair	9 fair
34 good	30 good
8 excellent	5 excellent

Comments. Do not know (35 responses); never used pool (27 responses); too cold.

28. How do you rate the adequacy of the general exterior lighting of the campus?

32 poor 44 fair 40 good 3 excellent

Comments. We need more lighting (15 responses); too dark; need another light in front of Del Rio Center; serious accident could happen.

29. How do you rate periodic maintenance in replacing burned-out light bulbs inside/outside of buildings?

Inside of Buildings		Outside of Buildings	
9	poor	9	poor
38	fair	44	fair
58	good	31	good
13	excellent	7	excellent

Comments. Too dark; seems to be considered as unimportant; no periodic maintenance.

This concludes the questions for this survey. Thank you for your participation in collecting this information.

A control number has been assigned to this survey to identify to whom it was sent. This will allow for follow-up action if further questions arise from this research. Complete confidentiality will be maintained during this research; your name will not be revealed to any other person. Control # ____.

NOTICE. TO RETURN SURVEY FOLLOW THE INSTRUCTIONS ON REVERSE SIDE OF THIS PAGE ----------

[See next page]

FROM: Survey Respondent
Southwest Texas Junior College

TO: Vice-Chairman, Physical Resources
Committee
Southwest Texas Junior College
Campus Bookstore [BOX #306]

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Appendix C

Control Chart for Procedural

Elements of the Plan

Southwest Texas Junior College

Title of Proposed Plan: _____

Department: _____ Department Head: _____

Proposed Start/Completion Dates: _____/_____

Actual Start/Completion Dates: _____/_____

Procedural Elements of the Plan	Time Increments															
	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
1. Assess current operations; develop vision and direction; mission statement																

[Continued]

2. Set objectives (measurable performance targets)																			
3. Build strategies to obtain objectives and goals																			
4. Implement the strategies (organize, budget, motivate, supervise, lead)																			
5. Evaluate performance, review the situation, initiate corrective adjustments (follow up)																			

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Control Chart for Procedural

Elements of the Plan

*Note. Set feasible time intervals for each procedural element of the plan.

Appendix D

Current Organizational Structure Chart

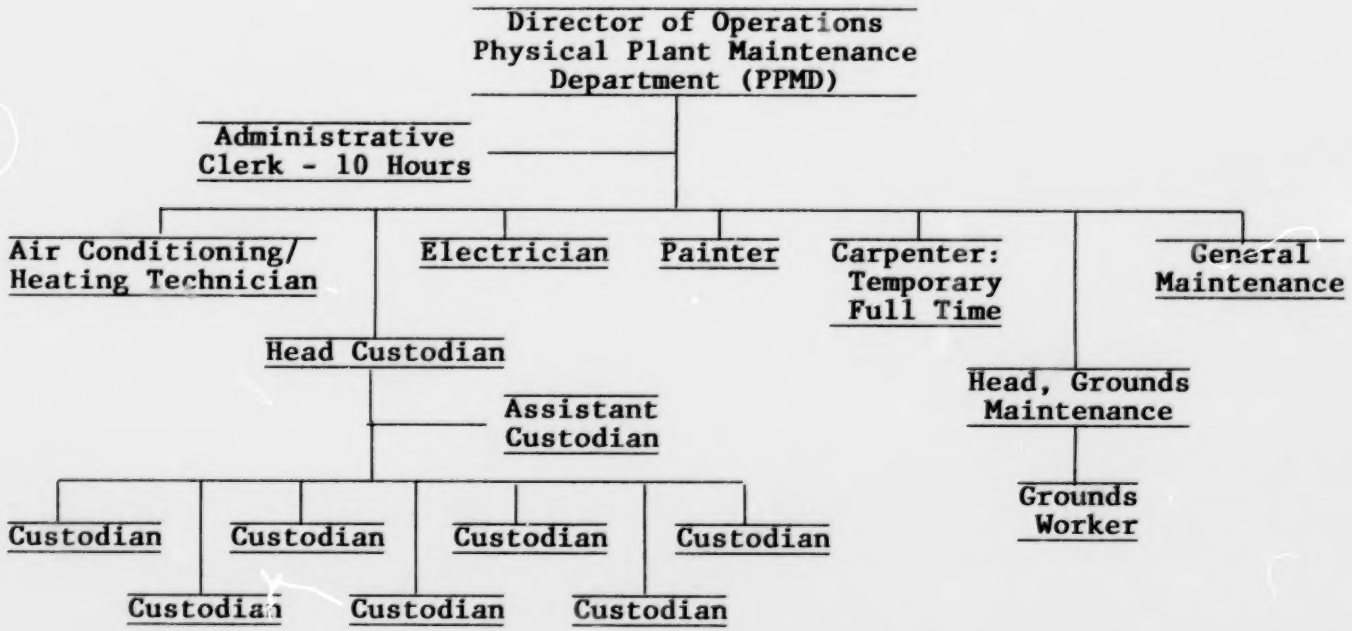

Figure 1. A graphic illustration of the current staffing of positions within the Physical Plant Maintenance Department at Southwest Texas Junior College.

Appendix E

Proposed Organizational Structure Chart

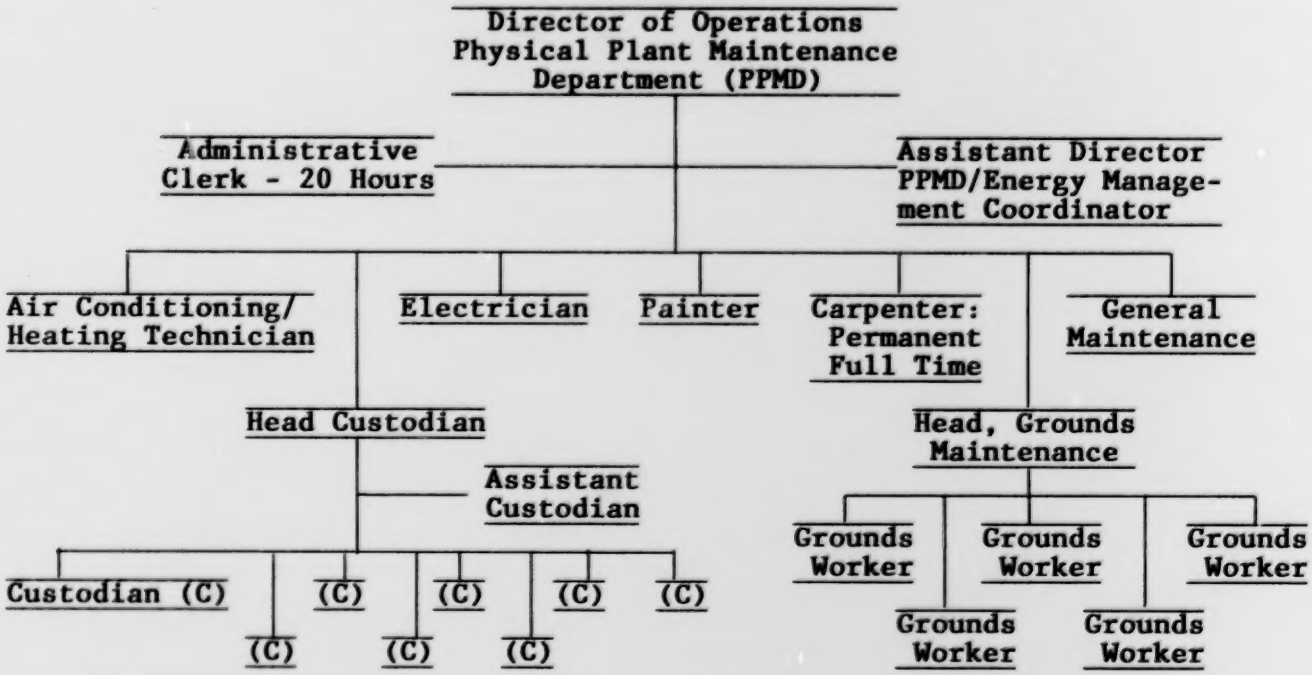

Figure 2. A graphic illustration of the proposed staffing of positions within the PPMD at Southwest Texas Junior College.

BIOGRAPHICAL SKETCH OF STUDENT

Wilford Winston Box was born in New Hope Community, Tennessee, to Alfred Harris Box and Beulah Browning Box. In 1978 he was awarded an Associate of Applied Science degree with major in Resource Management Technology, The Community College of the Air Force; an Associate of Applied Science degree in 1992, summa cum laude, with major in Business Management, Southwest Texas Junior College; a Bachelor of Arts degree in 1989, cum laude, with major in Sociology and support area requirement of upper division English, history, and philosophy, The University of Albuquerque. He earned a Master of Arts degree in 1981, grade point average 3.9, with dual major in Human Relations and Management, Webster University; and was awarded the C. M. Designation (Certified Manager) in 1984, Institute of Certified Professional Managers, James Madison University.

Box served in the United States Air Force for over 28 years and retired in 1985 with the rank of Chief Master Sergeant. He served tours of duty at military installations in the United States, Europe, and Korea. Among his decorations are the Meritorious

Service Medal, three times; the Air Force Commendation Medal, twice; and other medals and awards.

He graduated from the Air Force Leadership School with honors as the Distinguished Graduate and Speech Award recipient. He also is a graduate of the Headquarters Tactical Air Command Noncommissioned Officer Academy, Langley AFB, Virginia; the First Sergeant Academy, Keesler AFB, Mississippi; and the Senior Noncommissioned Officer Academy, Gunter AFB, Alabama.

Chief Box served five years as a First Sergeant and completed the last five years of his career as the Assistant Director of Personnel and Personnel Division Resource Manager at Laughlin AFB, Texas.

Box is Instructor-Coordinator, Business Management degree program, Department of Management, Southwest Texas Junior College. He is also an Adjunct Professor, Park College and Embry Riddle Aeronautical University at Laughlin AFB, Texas.

He enjoys basketball, camping, fishing, and holds a 1st Degree Black Belt in Korean Karate. Box resides in Del Rio, Texas with his wife Sharon Christensen. They have four children: two married

daughters, Laura Lea Tipton, Saint Joseph, Missouri and Edith Victoria Iuliano, Del Rio, Texas; and two sons who reside with them, David Edward and Brian Edward.